DOCUMENT RESUME

ED 457 635 EC 308 645

AUTHOR	Yeaw, John David Andrew
TITLE	Music Therapy with Children: A Review of Clinical Utility and Application to Special Populations.
PUB DATE	2001-08-00
NOTE	77p.; Doctoral Research Paper, Biola University.
PUB TYPE	Dissertations/Theses - Doctoral Dissertations (041)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Autism; Behavior Problems; *Disabilities; Early Childhood Education; Elementary Secondary Education; *Emotional Disturbances; Expressive Language; Interpersonal Competence; *Music Activities; *Music Therapy; *Outcomes of Treatment; *Program Effectiveness; Psychosis; Receptive Language; Self Esteem

ABSTRACT

This paper reviews the effectiveness of music therapy in treating children with psychiatric and developmental problems. The clinical utility of music therapy is first evaluated by examining the foundational effects of music on affect and behavior. Next, the two broad approaches to music therapy, active and passive music therapy, are discussed. This discussion is followed by a critical review of music therapy as applied to specific problems, including self-esteem problems, psychosis, developmental delays, expressive and receptive language deficits, social skills deficits, and autism. Early intervention music therapy programs, music therapy for children who are gifted, and psychiatric music therapy problems are also assessed. Finally, the utility of music therapy programs is considered. Findings from the review indicate there is evidence that music therapy is an effective treatment for a variety of problems. Additionally, at least one study suggested that music therapy is an equally viable treatment to verbal therapy. The studies also provide support for developmental and physiological theories of music therapy. Unfortunately, the review also found that music therapy research is fraught with methodological problems that weaken possible arguments for using this approach over other techniques. Additional research into the effectiveness of music therapy is urged. (Contains 116 references.) (CR)

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ED 457 635

MUSIC THERAPY WITH CHILDREN: A REVIEW OF CLINICAL UTILITY AND APPLICATION TO SPECIAL POPULATIONS

A Doctoral Research Paper

Presented to

the Faculty of the Rosemead School of Psychology

Biola University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Psychology

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by

John David Andrew Yeaw

August, 2001

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MUSIC THERAPY WITH CHILDREN: A REVIEW OF

CLINICAL UTILITY AND APPLICATION

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ABSTRACT

MUSIC THERAPY WITH CHILDREN: A REVIEW OF
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Music therapy with children is a neglected area of research and practice. The literature in this area has primarily focused on adults and behavioral medicine applications. However, a recent resurgence in interest in music therapy has marked the publication of research on the physiological and emotional benefits of music. Historically, music therapy has been conceptualized using psychodynamic theory and practiced by art therapists. However, music therapy is gradually becoming recognized as having broader clinical utility and is moving beyond its artistic roots into scientific application. Based on a review of the current literature, music therapy is an effective intervention with children for the treatment of psychiatric and developmental problems. However, more research is needed in this area to fully expand on these findings and develop effective models of music therapy.

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ACKNOWLEDGMENTS

I would like to express my gratitude to both Dr. William Worden and Dr. John Ingram for their support on this paper. Their interest and time invested in this project were much needed and greatly appreciated. I would especially like to thank Dr. Worden, my advisor, for his continuous support through my graduate studies at Rosemead. I appreciate his wisdom, direct feedback, humor, and encouragement that have made a difference for me. I would also like to thank Barbara Smith, a practicing music therapist and colleague of Dr. Worden, for her input and enthusiasm about music therapy. I appreciate the training and mentorship of my clinical supervisors, Karen Ciston, Dr. Art Prescott, Dr. Michael Brashears, Dr. Michele Winterstein, Dr. Jerre White, Dr. Cynthia Baker, Dr. Todd Hall, Dr. Gary Southwell, Dr. Linda Ross, Dr. Pamela Poff, Dr. Anneke van den Broek, Dr. Lyle Carlson, Dr. Michael Kellar, and Dr. Kenneth Miles. Most of all, I would especially like to thank my wife and colleague, Jennifer Schrader Yeaw, for her endless support, patience, and love that survived me through graduate school.

MUSIC THERAPY WITH CHILDREN: A REVIEW OF CLINICAL UTILITY AND APPLICATION TO SPECIAL POPULATIONS

Introduction

There is evidence in every line of psychological research supporting the use of music in psychotherapy. Music captures the human experience. Throughout time, music has colored the theme of societies and exalted great leaders. It has led soldiers into battle and brought them home in a song of victory. Like other forms of artistic expression, music communicates individual experience. It is a nonverbal but richly diverse language. It is only fitting to harness the beauty and power of music in psychotherapy.

There are several reasons that music is well suited for use in psychotherapy. First, music is extremely versatile and allows the clinician to adapt interventions to the patient and the setting. In a review of studies examining the functions of music, it was found that music served multiple functions, including social, emotional, and compensatory needs (Smeijsters, 1995). Second, music is multi-modal in the sense that it involves perceptual, cognitive, and physical processes (Skille & Wigram, 1995). Music can serve multiple functions as a

therapeutic intervention in affective, cognitive, and behavioral domains, depending on theoretical orientation. Third, music is universal and has the capability of crossing cultural, language, and ethnic boundaries. In their extended research in vibroacoustics, Skille and Wigram (1995) identified three universal and culturally independent qualities of music: a) low frequencies can relax, b) rhythmical music can invigorate, c) loud music can create aggression. Additional studies suggest that music with slow tempi and sustained tones are associated with sadness whereas loud music with bright tempi are associated with positive emotions (see Moreno, 1980). It is upon these basic principles that a theory of music therapy has developed and specific interventions have taken root.

Traditionally, music therapy has been viewed as an artistic endeavor and an adjunct to traditional clinical practice (Wigram, Saperston, & West, 1995). Traditionally stemming from behavioral and psychoanalytic roots, music therapy has experienced an identity crisis and cannot trace a common theory to clinical practice (Gfeller, 1987). Twenty-two years ago, the president of the National Association of Music Therapy (NAMT) described the ever-changing landscape of music therapy and called for music therapy to move from psychoanalytic to behavior modification approaches (Graham, 1978). Today, the theoretical perspectives are quite diverse and represent a variety of schools of thought, ranging from cognitive psychology (including the research literature on sensation

and perception) to contemporary psychodynamic models. A brief review of theoretical approaches to music therapy follows.

Developmental psychologists consider affect to be the first language (Maccoby, 1992). The research in this area has emphasized the importance of reciprocal socialization, the coordinated parent-child interactions believed to play a crucial role in socioemotional development (Cohn & Tronick, 1988). The very early forms of mother-child communication such as babbling and "motherese" are quite musical in nature (Oldfield, 1995). The infant responds not to the meaning of the words, but rather the quality of the sounds of the mother's speech. At this developmental stage, music facilitates the expression of non-verbal communication and provides a safe way to communicate to adults. As children grow, music therapy has the potential to fulfill the need for autonomy and development of cognitive and motor skills, an important developmental stage (Erikson, 1968). Whether the mechanism is the child imitating singing or playing an instrument, music therapy can serve a communicative role with the added richness and complexity of the music itself.

Psychodynamic theories of music therapy view music as symbolic language and a mediator between the conscious and unconscious mind (Austin, 1996). Music is seen as a symbolic representation of unconscious processes, a pre-verbal "voice" to communicate and discharge feelings (Priestley, 1995; John, 1995). On a more primitive level, music is also thought to reactivate fetal experiences of

pleasure from the auditory contact with mother in the womb (Galimany, 1993). The main technique in psychodynamic music therapy is clinical improvisation, synonymous to verbal free association techniques (Hughes, 1995). Psychoanalytic approaches to music therapy interpret a child's view of self and the world in the themes that emerge in the music. Music therapy is also a process of mirroring that promotes self-expression and exploration of thoughts, emotions, and behavior. Music, whether it be listening to a favorite song or playing a particular instrument, can serve as a transitional object that can be processed in therapy.

Cognitive models of music therapy have placed heavy emphasis on the physiological bases of sensation and perception and how the brain processes musical stimuli. Specifically, researchers have examined the cognitive processes of music pattern recognition and neural network principles and have proposed new models of how music affects the brain (Camilleri, 1992; Stevens & Latimer, 1997). There are qualitative age-related differences in cognitive development in music (Demorest, 1992). With advances in technology, the effects of music on the brain are becoming more apparent, leading to physiological theories of music therapy. Researchers have studied the way music affects physical conditions such as reducing experiences of pain, reducing heart rate, and lowering blood pressure (Pignatiello, Camp, Elder, & Rasar, 1989; Skille, 1989; Wigram, 1995). A number of studies have identified the usefulness of music in reducing perceived levels of anxiety when combined with behavioral interventions (Peach, 1984; Rider et al.,

1985; Saperston, 1989). More recently, brain imaging studies suggest that the auditory cortex, right frontal lobe, and temporal lobe regions have a complex interaction in melodic perception and musical imagery. In his recently published study, Zatorre (1999) found that the pattern of brain activity associated with listening to a particular melody is similar to the brain activity associated with imagining the melody. These pioneer studies are leading the way for additional research and support of physiological theories.

Although music therapy is applied to a broad scope of problems and populations including psychological treatment of the elderly mentally ill (Odell-Miller, 1995) and behavioral medicine applications (Standley, 1992), this paper will focus on specific psychiatric and developmental problems seen in children. The clinical utility of music therapy will be evaluated by first examining the foundational effects of music on affect and behavior. Next, the two broad approaches to music therapy, active and passive music therapy, will be discussed. This discussion will be followed by a critical review of music therapy as applied to specific problems. Finally, the utility of music therapy programs will be considered in addition to suggestions for future research.

Methodological Considerations

In general, outcome studies in music therapy are limited by methodological problems. Music therapy, in particular, poses considerable challenges to the interested researcher. The first problem encountered in these studies is identifying the measurable functions of music. Because music is quite complex, it is difficult for the researcher to identify discrete and measurable factors that can be operationalized and there is an emphasized need for standardizing musical stimuli (Dainow, 1977). A factor analysis study identified six functions of music: psychosomatic self-experience, aesthetic experiencing and compensation, compensation by isolation, background and diversion, sentiment/melancholy/nostalgia, and social enjoyment (Smeijsters, 1995). The literature on physiological changes produced by music is also quite broad in scope and discipline (Pignatiello et al., 1989; Skille, 1989; Wigram, 1995). For example, attempts have been made to measure the physiological changes that are produced by playing different musical instruments (Sutton, 1984). Music therapy research presents the investigator with additional variables such as types of instrument played, whether the clinician is musically trained, and type of music. Therefore, it is a significant challenge to design specific music therapy interventions, identify specific variables, and define desired treatment outcomes.

There is also the problem of identifying correlational versus causal relationships between music therapy and psychological changes. Playing and

listening to music is often a novel and pleasurable experience for children. It is therefore difficult to identify novelty effects versus effects specific to the application of music therapy techniques. The researcher must ask whether the outcome of music therapy is simply creating improved music behavior (i.e.- strumming a guitar) or whether music simply facilitates therapeutic processes with known value (i.e., increased learning of a cognitive set or improved rapport). This trend of assessing music behavior rather than the targeted psychological symptom was identified in a review of the literature in Great Britain (Bunt & Hoskyns, 1987) and continues to be a problem.

Another weakness is measurement. There is no validated and agreed upon method of evaluating research in music therapy (Adlridge, 1993). Unfortunately, there is a lack of adequate psychometric tools that are specific to music therapy, and thus there has been a trend to use standardized assessment tools that are not specific to music therapy (Sandrock & James, 1989). It is possible that these standardized tools do not identify positive changes specific to music therapy interventions. Reliable outcome measures from validated instruments designed for music therapy techniques would perhaps better capture the unique factors of this type of treatment (Isenberg-Grzeda, 1988).

Skille (1995) developed a promising assessment tool, the Skille Musical Function Test (SMUFT). The SMUFT measures 7 areas: a) Rhythmical Communication, b) Dynamic Communication, c) Melodic Communication, d)

Auditory Discrimination, e) Improvisation, f) Vocal Communication, and g) Movement Communication. Factor analysis of the SMUFT revealed three factors: a pure rhythmical factor, a melodic factor, and a general SMUFT factor. Although a promising instrument, the SMUFT needs further validation. There is clearly a long way to go in the area of assessment of music therapy.

Effects of Music on Affect and Behavior

Recent research has investigated the specific effects that music has on affect and behavior. Primarily, these studies have investigated the role of music in three areas: affect identification, mood induction, and the effects of music on learning. The research in this area will be presented followed by a review of specific music therapy applications.

Affect Identification

It is suggested that one of the primary advantages of music therapy is the non-verbal modality of this approach. A resurgence in affective models of child psychopathology has produced the view that emotions play a causal role in how a child forms social relationships and responds to environmental events (Mash & Dozois, 1996). With very young children, a non-verbal approach to therapy is developmentally appropriate and theoretically more effective than verbal therapy. With older children, a music therapy approach may be more effective in establishing rapport and providing a safe environment to express affect.

In a unique study, Dolgin and Adelson (1990) looked at how preschool and elementary-aged children recognized affective qualities in music. The authors cited research that indicated that music could change emotional state (see Pignatiello, Camp, & Rasar, 1986; Shatin, 1970). However, previous studies did not study children's ability to identify affective qualities in music, focusing rather on adults. One-hundred and twenty-eight children participated in this study consisting of 64 four-year olds, 32 seven-year olds, and 32 nine-year olds. The children were primarily Caucasian and from middle-class backgrounds and were equally distributed by gender. Two conditions were presented: music with a viola, and music with voice. The children's responses were compared to 32 adults (16 male, 16 female) who were randomly drawn from a pool of 100 college students. This control group served as both a reliability measure and developmental comparison. The stimuli consisted of 16 original melodies (4 for each emotion: happy, sad, angry, frustrated) that were played for 15 to 20 seconds. Because of their young age and developmental level, the 4 year olds in this study were carefully screened to determine if they understood the task of identifying and naming affect. Additionally, the 4 year-olds heard only voice or viola tapes in order to prevent subject fatigue.

The results revealed that preschool and elementary-aged children could accurately recognize emotional quality in music. By performing 2 separate ANOVAs (age X sex X condition X emotion & sex X condition X emotion),

significant main effects were found for age (F [2,90] = 56.28, p <.001) and emotion (F [3,270] = 63.22, p <.001). There was also a condition X emotion interaction (F [3,270] = 5.91, p <.001) where it was found that "sad" was more easily identified when performed on viola, though "angry" was more easily identified by voice.

Among the four-year olds, significant main effects were found for condition (F [1,60] = 10.75, p <.002) and emotion (F [3,180] = 4.41, p <.01). An interaction effect was found (sex X emotion) (F [1,180] = 6.46, p <.01). The authors noted that there were no effects for sex, and therefore collapsed the data and compared (age X emotion) effects. A main effect for emotion (F [3,90]=6.44, p<.001) was present in the voice condition.

Similarly, the effects of music on affect by gender, age, and exposure to music were studied by Robazza and his colleagues (1994). Eighty subjects, including 40 children (age 9 to 10 years old) and 40 adults (age 19 to 29 years old), participated in this study. Of the children, half attended schools with music programs. Music was selected by music experts based on emotional quality and separated into categories of emotions: "happiness," "sadness," "anger," and "fear." The subjects listened to the music pieces and were asked to assign an emotion (happiness, sadness, anger, or fear) and intensity of the emotion (score of 1 to 3) of the selection.

A multivariate analysis of variance on the data was performed yielding a significant main effect for age (F [1,72] = 5.00, p <.05) and emotional quality (F [3,216] = 7.29, p <.01). The author then looked at an analysis of the variance with respect to gender and age for each emotion and found that adults rated "happiness" less often than children (F [1,76] = 9.30, p <.01) whereas adults rated "anger" more often than children (F [1,76] = 4.17, p <.05). The children who were exposed to music in comparison to those who were not exposed did not differ in their ability to accurately identify the emotions in a selection of music. The authors concluded that the findings support the notion that music is a common language for emotional communication and mood induction (Kenealy, 1988).

The results of these two studies suggest that there are age-related differences in how affect is perceived in music. Additionally, music has contextual qualities, such as timbre and pitch, which are associated with emotions. These studies support the hypothesis that music may be used as a language of emotion for children.

Affect Shifts & Mood Induction

The mood altering effects of music were evaluated by Giles, Cogan, and Cox (1991) in a unique multimodal study. A total of 255 first and second grade children from Northern Virginia schools participated in this study designed to assess the effectiveness of music in altering mood. The authors used the "iso technique" (see Altshuler & Shebesta, 1941; Shatin, 1970), which matches the

subjects' mood to their emotional state. The subjects' mood was then "vectored" or altered to another mood through the use of music. Emotional states were measured by projective drawings and analyzed by art therapists. A baseline measurement of the children's emotional state was made by having the children color either a happy face or sad face at the beginning of the day that best matched their mood. The children were then exposed to three different styles of music: classical, Disney music, and new age electronic music for a total of 11 days including 2 days of control in which no music was played. The music was presented so that each style was repeated three times for a total time of 4 to 5 minutes. A mixed repeated measures experimental design was implemented with both between and within subject factors. The between subject factors were identified grade (first vs. second grade) and gender. The within subject factor was identified as the three styles. Finally, two control conditions were presented: drawing alone and no music or drawing.

The results of this study found a significant difference between the styles of music ($\underline{F}$ [2,250] = 9.65, $\underline{p}$ <.001) and between the first and second graders' response to the different styles ($\underline{F}$ [2,250] = 6.89, $\underline{p}$ <.001). New age music was the most effective in altering mood, followed closely by Disney music. Classical music was found to be the least effective. Interestingly, children who reported their baseline mood as sad were significantly less responsive to alteration of mood by the music ($\underline{F}$ [2,253] = 90.48, $\underline{p}$ <.001). The authors suggested that these

children might be more resistant to mood alterations and require exposure to more positive reinforcement over time.

Although this study utilized a large sample size (n = 255), it was limited by the method used to assess emotional states. The children had an extremely narrow range of identifying their feelings (either happy or sad). More reliable instruments to measure emotional states in children could have strengthened the results of this study. However, this study was useful in identifying differences in responses according to musical style, suggesting mood altering quality of music. This study also noted the usefulness of music and art in classroom settings as an inexpensive medium to assess emotional well-being in children.

Wooten (1992) investigated the effects of music on affect shifts in adolescents. The purpose of the study was to determine the relationship between music preference and shifts in affect and to determine the effects of listening to heavy metal music on affect shifts. A total of 35 subjects (21 females and 14 males) ranging in age from 12 to 18 who were in an inpatient psychiatric facility participated in this study. The subjects were diagnosed with major affective disorder, disruptive behavior disorder (including conduct disorder and oppositional defiant disorder), and psychoactive substance use disorder. The subjects were randomly assigned to one of three music listening conditions, a baseline condition, a heavy metal music condition, and a popular music condition.

Affect shifts were measured using the Positive and Negative Affect Schedule (PANAS), which has been found to measure positive and negative affect independently (Egloff, 1998). The author defined positive affect (PA) as "the extent to which a person feels enthusiastic, active, and alert" (p. 94). Negative affect (NA) was defined as "distress" and "displeasure." The author further explained how PA and NA are independently measured dimensions on the PANAS. Over a 3 day period, the subjects listened to 5 minutes of a music selection representative of each music condition and rated on a 5-point Likert scale how well they liked the selection played. The subjects completed the PANAS before and after listening to the music. On the 3rd day, the subjects in the heavy metal music condition listened to popular music and vice versa.

The results of this study found that, taken as a whole, there were no differences between the pretreatment and posttreament scores. However, a significant increase in PA scores was found for those preferring heavy metal music after listening to heavy metal music. These subjects became more calm, relaxed, and attentive as measured by the higher PA score. The author addressed some limitations of this study, including the small sample size that limits the generalizability of the findings and the "sterile" psychiatric inpatient setting, which may have limited the subjects' responses. Nevertheless, this study describes the mood induction properties of music that make it appropriate to therapeutic intervention.

Enhanced Learning

One of the most remarkable findings about music is that it seems to enhance learning and memory. Preliminary studies have been very promising and support the clinical utility of music in a variety of settings. Rauscher, Shaw, and Ky (1993) investigated the effects of music on spatial task performance. The authors investigated whether music would improve spatial reasoning as measured by 3 subtests of the Standford-Binet Intelligence Test. The subtests used for this study were thought to measure spatial reasoning and consisted of a pattern analysis test, a multiple choice matrix reasoning test, and a multiple-choice paper-folding and cutting test. The 3 subtests are reported to have adequate reliability. (r = .92) for pattern analysis, (r = .90) for matrices, and (r = .94) for paper-folding and cutting and load on the Nonverbal Reasoning/Visualization factor (Sattler, 1992). The 36 participants in this study were exposed to three conditions. (a) listening to Mozart's Sonata for Two Pianos in D Major K488, (b) listening to a relaxation tape, or (c) silence. The pulse rate of each participant was taken following 10 minute exposure to the conditions to see if physiological arousal was related to changes in performance. A one factor (listening condition) repeated measures analysis of variance was performed on the three subtest standard scores of the Stanford-Binet.

The results of this study suggest that listening to music, specifically classical music, improved spatial task performance. The participants who were in

the music condition scored significantly higher on the subtests than participants in the other two conditions (F [2,35] = 7.08, $p < .002$). The music condition differed significantly from the relaxation (Scheffe's t = 3.41, P = 0.002) and silence condition (t = 3.67, P = 0.0008). Also, the authors found that the relaxation and silence conditions did not differ significantly (t = 0.795, P = 0.432, 2-tailed). Finally, the authors did not find an interaction or main effect for physiological arousal (as measured by pulse rates), order of presentation of conditions, or experimenter effect.

Because participants were exposed to one type of music, this study was limited in looking at qualitative effects of the music. Also, it did not report demographic data about the sample, including age ranges. Although the Stanford-Binet has good validity and reliability, only one measure of spatial reasoning was utilized in this study. Nevertheless, the study was very promising as it revealed enhanced learning effects in adult participants.

A subsequent study by Gardiner, Fox, Knowles, and Jeffrey (1996) evaluated a music and visual-arts curriculum and how it improved learning in elementary school children. A total of 96 children (ages 5 to 7 years old) in eight 1st grade classes participated in a music and visual-arts curriculum that focused on sequenced skill development. There were two control groups (classrooms) in this study, which consisted of standard visual-arts and musical curriculum. The children were administered the First-Grade Metropolitan Achievement Test and

comparisons were made to the kindergarten achievement scores. The authors also provided a third measure, classroom teacher evaluations on Likert-scale questionnaires.

A Chi-Squared was computed to compare the two groups. The authors found that after 7 months of the specialized music curriculum, the children in the treatment group with comparatively low kindergarten achievement scores improved in mathematics to the degree that they performed at grade level or above in comparison to the control group ($\underline{P} < 0.05$, $\underline{X}^2$). At a one year follow-up, the children exposed to the music curriculum were still ahead the children in the control group ($\underline{P} < 0.05$, $\underline{X}^2$). The percentage of children at or above grade level in math was highest in the test group as compared to the control group.

In summary, the authors postulated two possibilities for these effects. First, music may be motivating, making learning enjoyable. Second, music provides a "mental stretching," allowing new learning through exposure to novel experiences. A limitation in this study was that specific skills were not quantitatively analyzed (i.e., math calculations vs. math reasoning, or both). It would be helpful to examine specific improvements in a replication study.

The specific qualities of music, whether they be affect matching or enhancement of learning, are surely just a few variables in the rich diversity of music. There appears to be general principles about the tones and rhythm of music that are associated with categories of emotion. There also appears to be a corollary

effect on mental processing, specifically spatial task performance. Research in the effects of music has been promising thus far, and the challenge appears to be identifying and isolating specific causal factors.

Active Versus Passive Music Therapy

The nature of music therapy yields itself to a wide variation of both technique and intervention. Specifically, music therapy can be broadly categorized as active or passive. Active music therapy primarily involves the child playing an instrument or singing a song. Passive music therapy, on the other hand, typically involves the child listening to music and discussing how they are thinking or feeling. Music has been discussed as having both an active, such as a communicative function, as well as a passive, or receptive (i.e., mood inductive) component. Montello and Coons (1998) compared the passive versus active effects of group music therapy. They hypothesized that active music therapy with preadolescents would significantly improve target behaviors compared to participating only in passive music therapy.

The authors discussed conceptual frameworks for this study. First, they stated that individuals with attention problems, perceptual disorders, and language deficits may lack an internal rhythm as a consequence of parental neglect or trauma. They further stated that improving internal rhythm might be helpful for

children to develop internal structure and security, as well as developing coordination of cognitive and psychomotor abilities (see also Montello, 1999). Secondly, the authors cited previous research that suggests that rhythm training enhances learning (see Parente & O'Malley, 1975; Ross, Ross, & Kuchenbecker, 1973).

Sixteen preadolescents ranging in age from 11 to 14 years old who were attending a special education program at a middle school in New York City participated in this study. Six of the subjects were Caucasian; 7 were African-American; and 3 were Hispanic. The subjects were diagnosed with an emotional disturbance (not specifically identified by the authors), learning disability, or attention deficit disorder. Of the 16 subjects, approximately half were taking psychotropic medication. The subjects were attending music classes integrated into their school curriculum and therefore random assignment of subjects was not possible.

Attention, motivation, and hostility were measured by 24 items of Achenbach's Teacher's Report Form (TRF). The subjects were divided into three groups: A, B, and C. Group A (experimental group) consisted of 5 boys and 1 girl. Group B (control group) consisted of 4 boys. Finally, Group C (experimental group) consisted of 5 boys and 1 girl. Groups A and C participated in active music therapy which consisted of rhythm training and improvisation on musical instruments. A professional percussionist and music therapist provided the

subjects with specific techniques such as repeating modeled rhythms, storytelling, and solo-improvisation. Group B participated in passive music therapy which consisted of listening to different types of music and sharing their responses to the music. For all groups, the sessions lasted for 45 minutes over 12 weeks. Following this first half of the study, Group A was given passive music therapy for another 12 weeks while Group B was given the active music therapy intervention. Group C continued the active music therapy for the next 12 weeks.

The results of the study showed that an unexpected increase in hostility was found for active music therapy (t [6] = 2.49, $p<.05$). Conversely, in the active music therapy group, listening to music and discussing their responses, rather than playing the instruments themselves, improved the subjects' motivation. The authors concluded from this study that children with externalizing problems appeared to benefit more from active music therapy. The findings in this study do not address the hypothesis that music therapy provides an internal structure and rhythm for children with attention problems and language deficits. Paradoxically, the results of this study found a significant effect for passive music therapy to reduce motivational problems (t [4] = 3.22, $p<.05$). The findings are limited by a small sample size and the lack of random assignment in the research design. However, this study suggests that there is a qualitative difference between active and passive music therapy approaches.

Application of Music Therapy to Specific Problems

The research literature regarding the application of music therapy to specific problems is quite diverse, but limited in number. This state of the literature is unfortunate, considering the ease of adaptability of music therapy interventions to different populations and settings. The lack of empirical studies in music therapy may be due in part to the methodological problems that are encountered in music therapy research. Also, music therapy has not enjoyed a wide following and acceptance into standards of clinical practice. The latter may be changing as more guidelines adopted by such organizations as the National Music Therapy Association (NMTA) are becoming more available and additional research on the efficacy of music therapy is published. The core of research in music therapy has focused on adults. However, music therapy is being recognized as a versatile and developmentally appropriate intervention with children and adolescents.

The following clinical areas and problems have been investigated using music therapy as both the assessment instrument and primary treatment tool. Although these problems are quite diverse, an underlying theme of how music therapy is applied effectively emerges.

Self-Esteem

Self-esteem, or the evaluative component of the self-concept, begins to develop in the middle childhood years (Zigler & Finn Stevenson, 1993). There are multiple influences on self-esteem including parenting, school, and peer relations. During the middle childhood years, a child reaches the developmental crisis termed by Erikson "industry versus inferiority." It is during this time that a child finds areas he is good at to gain a sense of industry. On the contrary, a child might learn that he is not good at many things and begins to develop a sense of inferiority (Erikson, 1963).

Music therapy is a developmentally appropriate way of helping children share their learning of new skills. By learning how to play an instrument or by exercising creativity by writing a song, a child has the opportunity to develop a sense of industry and competence. A study by Haney & Durlak (1988) found that treatment programs are more effective than prevention programs in changing self-esteem. Music therapy may be used for both prevention and treatment.

Haines (1989) investigated the effects of music therapy on the self-esteem of emotionally disturbed adolescents. A total of 19 adolescents (ages 11 to 16 years old), who were receiving a special curriculum for the emotionally disturbed, were selected by a convenience sample. The adolescents were identified by fairly vague criteria: having a lack of satisfying interpersonal relationships, frequent moods of depression and unhappiness, and frequent occurrences of inappropriate

behavior. All subjects were reported to be in the normal IQ range and some were on psychotropic medications. The subjects were mixed race (Caucasian and African-American) and were from a middle class socioeconomic background. The subjects were divided into 4 treatment groups: Ten subjects participated in a music therapy group; Nine participated in verbal therapy group. Subjects in the music therapy group were asked to name their favorite music or activity in the music therapy group. They also engaged in songwriting, listening activities, singing, rhythm activities, improvisations, and call-and-response exercises. The subjects in the verbal therapy group were asked to name their favorite activities. They also shared autobiographies, engaged in story telling and story writing, and played word association games. Scores on the Coopersmith Self-Esteem Inventory (CSEI) were collected as a baseline measurement. Treatment was provided in 2 stages consisting of 6 one-half hour sessions over a 3 week period.

In the first stage of this study, each of the music and verbal therapy groups was given the objectives of choosing a name for its group and choosing a final product. Subjects were also asked to recognize a strength in oneself and in another member of the group. The second stage of this study encouraged peer leadership. The groups were given the assignment of producing a presentation consisting of a musical piece in the music therapy group and a poster or verbal presentation in the verbal therapy group. Finally, the subjects were asked what they liked about participating in the groups. An observation log was completed after each session

by the investigator, who rated on a five-point scale 15 behaviors related to self-esteem. At the end of the treatment, the subjects completed a posttest measure of the CSEI.

A 2-way ANOVA with repeated measures was computed from pretest, posttest, and overall scores on the CSEI. No significant differences were found between the music therapy group and the verbal therapy group in self-esteem as measured by the CSEI and observer ratings.

Although this study did not demonstrate a significant difference between the music therapy and verbal therapy groups, the generalizability of these findings are limited by methodological problems. Specifically, this study was lacking in terms of interrater reliability because there was only one subjective measurement by the sole investigator of this study. Additionally, there was a small sample size and a lack of random assignment to treatment groups. However, this study suggests even with the above qualifications that music therapy was an equally viable treatment to the verbal therapy.

Sexual abuse has a negative effect on self-esteem (see Cornman, 1997). In addition to low self-esteem, children manifest other symptoms including depression, inability to trust, and poor body image (Blitstein & Michel, 1979). Clendenon-Wallen (1991) measured changes in self-esteem in adolescents who participated in music therapy in conjunction with a Sexual Assault Program (SAP) support group. Citing previous research, the author identified expressive therapies

as an appropriate and effective treatment with this population (Courtois & Sprei, 1988).

A total of 11 adolescents (2 males and 9 females) volunteered to participate in the study, all of whom were victims of varying degrees of sexual assault. All subjects participated in music therapy. However, three subjects also participated in a music skills group that consisted of a 45-minute pre-session group that taught specific musical skills. Self-esteem was measured by behavioral observations and by the pre and post-test scores on the Adjective Check List, a 300-item checklist of descriptive adjectives. Only 34 items used were deemed to be indicative or contra-indicative of self-confidence to measure changes in self-esteem. The author identified the following behaviors as indicators of low self-esteem: avoiding eye contact, depressed affect, spoke only when prompted, rarely smiling, poor posture, and crying. In addition to these behaviors, the author discussed how the subjects expressed feelings of anger, guilt and helplessness.

The results of this study showed that the music therapy intervention overall increased self-confidence on self-rating indicators ($t = 1.948$, $df = 10$, $p < .05$). There were no significant differences between the self-rating scores of self-confidence of subjects who also participated in the music skills group. The results of this study should be interpreted with caution due to a small sample size ($n = 11$). Also, there was no control group to compare the differences between normal subjects and those suffering from low self-esteem.

The results of these two studies on self-esteem are mixed. However, both studies were limited by their research design. There are numerous case studies that have documented improvements in self-esteem from music therapy interventions for sexually abused children (Lindberg, 1995), emotionally impaired adolescents (Edgerton, 1990; Saroyan, 1990), conduct disordered adolescents (Kivland, 1986), hospitalized adolescents (Henderson, 1983), and disadvantaged children (Michel & Martin, 1970). It is apparent that additional empirical studies are needed in this area.

Psychosis

According to DSM-IV, childhood schizophrenia and other psychotic disorders present as a cluster of symptoms including delusions, hallucinations, disorganized speech, disorganized or catatonic behavior, and negative symptoms (American Psychiatric Association, 1994). The literature suggests that children with schizophrenia also present with a variety of other symptoms including depression, oppositional behavior, and conduct problems (Russell, 1994). A recent study found that psychotic children have difficulty attending to verbal and nonverbal stimuli, have impairments in visual-motor coordination, and impairments in executive functioning (Asarnow, 1994; Asarnow, J. R. & Asarnow, R. F., 1996). Furthermore, the treatment and assessment of psychotic children is complicated by two primary concerns. First, it is difficult to distinguish normal childhood fantasies from psychotic symptoms. Second, because younger

children lack well-developed language and cognitive skills, they are very limited in their ability to describe their experiences (Garralda, 1984).

A study by Burleson, Center, and Reeves (1989) investigated the effects of music on task performance in psychotic children. Using an ABAB design, the authors examined how music affected task performance in children who were diagnosed with either schizophrenia or autism and exhibited self-stimulating behaviors. In this simple yet ingenious study, four boys between the ages of 5 and 9 years old were exposed to music while sorting colored tokens. A criterion level of 40% improvement on the task was set. The boys were first given a baseline measure of their performance, followed by an intervention (music played in the background). Next, a second baseline measure was obtained, followed by another intervention (again music played in the background). Although the sample size was extremely small, the study yielded marginal significance between intervention and baseline phases ($p < 0.62$). The authors noted that this was the lowest probability value that could be obtained with only 4 subjects.

It was unclear how music facilitated task performance. The authors of this study suggested that music masks extraneous auditory stimuli, thus resulting in improved attention and concentration. The results of this study also have very limited generalizability due to the small sample size.

Psychotic disorders in children are particularly challenging in terms of diagnosis and treatment. This study suggests that music therapy is an effective

intervention for one associated feature of this diagnosis, poor attention and concentration. As suggested previously, perhaps music therapy serves as an organizing internal structure for psychotic children (Montello & Coons, 1998). Further research in this regard should focus on identifying unique factors in music therapy that effect positive change.

Developmental Delay

Working with special populations demands creativity and flexibility in both the treatment approach as well as in the clinician. Children who are developmentally delayed require individualized treatment plans in accord with their specific needs. Unfortunately, the majority of the literature is limited to treating normally developing children. However, children with developmental delay have varying capacities in language and motor skills that limit the clinician's assessment and treatment efficacy. Music provides a non-verbal and kinesthetic medium for communication and treatment.

Aldridge, Gustorff, and Neugebauer (1995) investigated the use of creative music therapy in the treatment of children with developmental delay. The purpose of the study was two-fold: to demonstrate the viability of music therapy for developmentally delayed (DD) children and to present an integrated approach to music therapy research that combines both qualitative and quantitative data.

Music therapy is a useful communication tool for DD and very young children who have limited language skills. The authors cite research that suggests that children are active and constructive thinkers (Case, 1993; Lewis, 1993). An active music therapy approach with children might therefore tap a child's cognitive and emotional life. The authors also described music therapy as a dynamic personal relationship between the child and the clinician in the proximal zone of learning. Music therapy is a relationship that allows for self-expression, containment of frustration, and self-mastery.

Aldridge and his colleagues randomly assigned 12 DD children to two groups. The children were referred by a pediatrician and ranged in age from 4 to 6 ½ years old (developmental age 1 ½ to 3 ½ years old). Six of the children were assigned to the treatment group, and six were assigned to the wait-list (control) group. For ethical reasons, the two groups switched between the treatment and wait-list condition every 3 months. The entire study lasted 12 months, and the children were assessed once every 3 months. Four children dropped out of the study for various reasons, leaving the total sample size of eight children. The children in this study had no prior music therapy treatment and were not receiving another creative art therapy. They had no physical problems, and none were on medication. The authors hypothesized the following: a) In the first session of treatment, there would be more improvements in developmental ratings in the

music therapy group than in the wait-list group; b) By the end of the two treatment sessions, both groups would have improved equally.

To measure developmental changes, the authors used the Griffiths Scale and the Nordoff and Robbins Rating Scale. The Griffiths Scale is proposed to measure developmental capacities in several areas. It consists of six scales: Locomotor Development (Scale A), Personal-Social (Scale B), Hearing and Speech (Scale C), Hand and Eye Coordination (Scale D), Performance Tests (Scale E), and Practical Reasoning (Scale F). The scales purport to measure motor, social, cognitive, and language skills. The Nordoff and Robbins Rating Scale was designed to measure individual responsiveness to music therapy. It consists of two scales: Child-Therapists Relationship in Musical Activity (Scale I) and Musical Communicativeness (Scale II). The scale provides a rating on 10 levels of musical communication ranging from "no response" to active and purposive musical communication. Both scales have never been validated in clinical practice but provide a rough assessment of these constructs.

The results of the study showed support for the first hypothesis. There was greater developmental change in the music therapy group (df =1, F = 7.072, p = 0.045). The authors also found that the wait-list group "caught up," and improved on these measures after receiving music therapy. The music therapy and wait-list groups were found to differ significantly at the first assessment (Test 1) on the following scales: Hearing and Speech (Scale C; F = 19.851, df = 1, p = 0.0004),

Personal-Social (Scale B; $F = 6.448$, $df = 1$, $p = 0.044$), and Hand and Eye Coordination (Scale D; $F = 7.523$, $df = 1$, $p = 0.034$). A significant difference between the groups was also found at the third assessment (Test 3) on the Personal-Social measure (Scale B; $F = 6.937$, $df = 1$, $p = 0.039$). The authors found that the groups continued to differ on all 4 assessments (Tests 1-4) on the Hearing and Speech measures (Scale C; Test 2: $F = 17.514$, $df = 1$, $p = 0.006$; Test 3: $F = 17.214$, $df = 1$, $p = 0.006$; Test 4: $F = 28.357$, $df = 1$, $p = 0.002$). Finally, the authors found that the Hand and Eye Coordination measure (Scale D) significantly correlated with change at test 1: $r = 0.915$ and at test 2: $r = 0.903$) throughout the series of assessment times (Tests 1-4). Scale D also significantly correlated with changes in Performance (Scale E; $r = 0.902$) and changes in Practical Reasoning (Scale F; $r = 0.933$).

The authors concluded that the changes on these scales are demonstrative of the effects of music therapy. Specifically, the activity of music therapy produced changes in non-verbal communication and motor skills. They concluded that music therapy provides the building blocks for developmental change. The authors suggested that home-based measures could assess the transfer of learning of new skills. Additionally, the authors suggested that single-case longitudinal studies would be appropriate for measuring natural developmental changes versus the benefits of music therapy across time for a DD child.

The strength in this study is that the authors investigated developmental changes in several domains: motor, cognitive, social, and language. Unfortunately, a weakness in this study is the use of instruments that have not been adequately validated. Though the scales were relatively face valid in what they were reported to measure, they relied on the clinician's report rather than independent assessment. Nevertheless, the authors conceded that this study was meant to point toward future research rather than provide definitive conclusions about the effects of music therapy with DD children.

Expressive and Receptive Language Deficits

Deficits in expressive and receptive language have been found to be characteristic of children with developmental disabilities (DD; Sigafoos & Pennell, 1995) and music therapy has strong potential for success in the treatment of DD children. Previous research with language delayed children found improvements on measures of expressive and receptive language when the tests were administered in melody (Hoskins, 1988). From a learning theory perspective, music has been found to be an effective contingent reward in promoting spontaneous speech in physically handicapped preschoolers (Harding & Ballard, 1982). Similarly, Braithwaite and Sigafoos (1998) investigated the role of music therapy on communication responsiveness in DD children. In this reversal experimental design, the authors compared the effects of social-verbal stimuli versus musical stimuli on eliciting communicative behaviors. It was suggested that

by identifying antecedent factors, the musical antecedent might provide opportunities for communication, thus improving language skills. The authors cited earlier studies suggesting that music facilitated communicative responsiveness (Edgerton, 1994; Hairston, 1990; Harding & Ballard, 1982; & Seybold, 1971).

The authors selected 5 children (2 girls and 3 boys) who were identified as having developmental disabilities and communication impairment. The children in this study ranged in age from 3 years, 5 months to 4 years, 10 months, and they were all in the same classroom at a preschool for developmentally delayed children. The developmental delays were measured using the Revised Gesell Developmental Scales and the Vineland Adaptive Behavior Scales, standardized instruments commonly used to measure developmental delay. Expressive and receptive language was measured by the Bzoch-League Receptive-Expressive Emergent Language Scale-Second Edition (REEL-2). The children in this study had receptive language ages ranging from 8 to 22 months and expressive language ages ranging from 8 to 22 months.

Communication responsiveness was defined as natural gestures, manual signs, vocalizations, and spoken words that are relevant to the situation. Communication opportunities were delineated (10 seconds) in 3 categories and defined as greeting (i.e., waving, saying "hello"), naming (i.e., pointing at named object), and requesting (i.e., pointing to oneself, saying "my turn"). Two

conditions were compared: the social interaction condition and the musical antecedent condition. The social interaction condition consisted of the teacher initiating verbal and non-verbal communication with the children. For example, the teacher would say "hello" to the children or specifically ask the children, "What is this?" The musical antecedent condition was similar except that the interactions consisted of the teacher playing acoustic guitar and singing. For example, during the greeting communication opportunity, the teacher sang a song that identified each child by name. To measure interrater reliability, data collected by an independent observer was compared to the teacher's observations yielding an overall mean of agreement of 92.74%.

The authors found that for three out of the five children, the musical antecedent condition facilitated communication responsiveness. However, for the other two children, communication responsiveness was comparable across both conditions. Individual factors, such as higher scores on measures of adaptive behavior, were noted to have perhaps impacted the results of this study. This study is limited by the small sample size. However, this study suggests that expressive and receptive language parallels the active and passive music therapy approaches, and therefore more research is needed in this area.

In another study of the effects of music therapy on language, Cassidy (1992) compared the performance of children with communication disorders and normal children on music tasks. This study also compared the use of verbal

responses, visual and verbal responses, and gestural responses with verbal responses to a music listening task. Forty-eight subjects representing two groups of children participated in this study. The first group consisted of 24 preschool children in 4 age categories (3, 4, 5, and 6 years old) who were attending a summer day camp for children with communication disorders. The second group consisted of 24 children attending preschools in a large metropolitan area who were selected based on parent report of normal communication development. The subjects were then randomly assigned to one of three treatment conditions. Subjects in the verbal-only groups listened to music and were asked, "Was this song loud or soft?" and "Was this song fast or slow?" Subjects in the verbal/visual group heard the same questions but were also provided visual cues. For example, "loud" was represented by a picture of a child covering his ears. A picture of a small bird represented "Soft." A picture of a man running represented "Fast." A picture of a turtle represented "Slow." Finally, subjects in the verbal/gesture group heard the same questions accompanied by physical gestures (i.e., "slow" represented by arms cradled and swaying).

Two tapes were made (Tape A and Tape B) consisting of 4 short musical examples with contrasting dynamics and tempo. The subjects were told they would be listening to music and would be asked a question to think about while listening to the music. The questions were asked immediately before and after the music was played. The subjects' scores were recorded in each treatment condition.

A 3-way ANOVA was computed using overall scores between the variables of the group (communication disorder vs. normal language), treatment condition (verbal, verbal/visual, and verbal/gesture), and age (3 years, 4 years, 5 years, and 6 years).

The results of this study found a significant difference due to treatment (F [2, 24] = 6.5, p = .006). There were no significant interactions among the other variables. Furthermore, subjects in the verbal/visual and verbal/gesture condition scored significantly higher than subjects in the verbal alone group (M = 2.63, p <.05).

The authors noted that preschool children with communication disorders appear to perform similarly to normal children on basic music skills and would therefore be appropriate to participate in music activities with their peers. Essentially, music therapy may be an area of effective mainstreaming that may result in increasing opportunities for social interaction for children with language problems. It is also likely to enhance a child's self-esteem and self-confidence by participating in a mainstream activity.

Social Skills Deficits

Activity and music therapy have been widely used as adjunctive therapies in diverse settings (Johnson, 1981). Previous research has found that music increased interaction among children with handicaps (Humpal, 1991). In a recent study, Ulfarsdottir and Erwin (1999) considered whether music therapy would be an effective social skills intervention. They based their study on the work of

Spivack and Shure (1974), who developed Interpersonal Cognitive Problem Solving (ICPS). This approach identifies basic skills defined as Alternative Solutions Thinking (AST) and Consequential Thinking (CT). Ulfarsdottir and Erwin hypothesized that social cognitive skills in children, as measured by AST and CT, would increase with exposures to music therapy. Additionally, the authors hypothesized that social cognitive skills in children would be more advanced in children with more extensive music exposure.

The participants in this study consisted of 76 five year-old children (40 boys, 36 girls with 2 drop-outs) who were in their final year at play schools in the Reykjavik, Iceland area. Two pre-school classes were each randomly assigned to two conditions. One of the classrooms received a short-term music therapy intervention. The second classroom received no treatment. A third classroom was identified as a comparison condition and consisted of students who attended a musical enrichment program. The dependent variables in this study were the levels of CT and AST that were assessed before the intervention, immediately after, and 7 months later.

CT and AST were measured by a variation of the Pre-school Interpersonal Problem Solving Test (PIPS), which consists of hypothetical problem solving vignettes that were read to the children. To measure CT, the number of potential consequences offered by the children was counted. AST was measured by providing the children with the prompts such as, "What can X do?" and "Could X

do anything else?" The music therapy intervention consisted of 8 sessions, biweekly, that lasted 25 to 30 minutes. The sessions emphasized music therapy techniques such as improvisation and musical dialogue.

The results of this study found that there were no differences in pre- and post-intervention measures. However, at the 7 month measure, significant improvements were found in AST (t [36] = 2.39, p <.05) and CT scores (t [36] = 2.55, p <.01) in children who participated in the music therapy intervention in comparison to the children in the control group. However, at follow-up, children who attended a musical enrichment program had the highest scores of all. They scored significantly above children in the control group on AST (t [36] = 5.98, p <.001) and CT (t [36] = 4.01, p <.001). They also had significantly higher scores on AST (t [30] = 2.84, p <.01) and CT (t [32] = 3.22, p <.01) than the children who had received the music therapy intervention.

The limitations of this study include the lack of reliable methodology in the assessment and measurement of social cognitive skills. In particular, the authors used discrete behaviors (i.e., verbalizing alternative solutions to problems) that they attributed to social skills but did not rely on in vivo measures of social skills behaviors (i.e., sharing and compromising during a dispute). However, the results of this study are promising in that it suggests measurable differences in a group of children who receive music therapy interventions. Improvements in social cognitive skills were observed 7 months later that may be suggestive of

cumulative learning. Finally, children in the music enrichment program had higher scores overall on social cognitive skills.

Autism

The diagnostic features of autism consist of qualitative impairments in communication and social interaction and restricted repetitive and stereotyped patterns of behavior. Additionally, delays are seen in the areas of social interaction, language, and play (APA, 1994). The research on children with autism has primarily focused on language as a predictor of prognosis (Gillberg & Steffenburg, 1987). Specifically, studies have found that children who were mute or socially unresponsive had poor outcomes at follow-up (Bagley & McGeein, 1989). Subsequent intervention studies have focused on social communicative behaviors such as language and nonverbal behaviors (Koegel & Frea, 1993).

Based on the literature in this area, Edgerton (1994) investigated the effects of improvisational music therapy on the communicative behaviors of autistic children. The purpose of the study was to determine if there are significant differences between communicative behaviors between the first improvisational music therapy session and the last. The subjects were 11 autistic children (10 boys and 1 girl) ranging in age from 6 to 9 years. Five of the subjects were nonverbal, and four were described as having limited functional language skills.

The author utilized the Checklist of Communicative Responses/Acts Score Sheet (CRASS), an original measure constructed by the author, as a dependent

measure instrument. The CRASS is a behavior checklist consisting of 107 items divided into two categories: musical and nonmusical behavior. The sessions lasted 30 minutes with 10 minute intervals in a reversal design: a) intervention, b) one-session withdrawal of intervention, and c) reintroduction of intervention. Two observers recorded communicative behaviors that were tallied, resulting in a total CRASS score for each child. Inter-rater reliability for occurrences was reported to range from 75% to 100% with a mean of 86.2%. Non-occurrences inter-rater reliability was reported to range from 77% to 100% with a mean of 94%. The intervention consisted of improvisational music therapy based on a technique developed by Nordoff and Robbins (1977). During the reversal phase, the experimenter played and sang precomposed music and continued to evoke the children's communicative responses. Next, the improvisational music intervention was re-implemented.

The results of this study found an overall increase in total scores and a significant difference (at the .01 level, $\underline{T} = 0$) between pre- and post-intervention scores. The Wilcoxon Matched-Pairs Signed-Ranks Test indicated significant differences at the .01 level between the first session and last session scores for tempo ($\underline{T} = 0$), rhythm ($\underline{T} = 0$), structure/form ($\underline{T} = 0$), pitch ($\underline{T} = 0$), speech production ($\underline{T} = 0$), and communicative-interactive ($\underline{T} = 0$). At the .05 level, significant differences were found between first session and last session scores of communicative intent ($\underline{T} = 2.5$). Musical vocal behavior gains and nonmusical

speech production gains were found to be significantly correlated at the .05 level (r = .645, t = 2.532). Additionally, the authors reported a significant correlation (r = .773, <.01, t = 3.658) between the gains in CRASS scores and the parent ratings. Based on the results of this study, improvisational music therapy was found to be an effective intervention for increasing communicative behaviors in autistic children.

An interesting hypothesis was raised by the author with regards to the significant correlation between musical vocal behavior gains and nonmusical speech production gains. It was suggested that communication through music bypasses speech and language barriers of autistic children. More research is needed to investigate this hypothesis. Although this study had good experimental design, the generalizability of the results was limited by the small sample size. Additionally, there are not many measures specific to music therapy. For this reason, the author presented an original measure, the CRASS, which would benefit from further research on the reliability and validity.

Assessment of Music Therapy Programs

Research in music therapy must go beyond identifying specific techniques and theoretical approaches. Like all treatment programs, the developing discipline of music therapy benefits from program evaluation.

Early Intervention Music Therapy Programs

To see how music is used in educational programs, Wolfe and Stambaugh (1993) evaluated the popular children's program Sesame Street. This descriptive study was designed to quantify and categorize the way music is used in the following areas: (a) number and duration of music and nonmusic segments; (b) number of segments that included music as a structural prompt; (c) number of songs; (d) tempo and melody ranges of songs used to teach skills; (e) kinds of voices used to sing the songs; and (f) styles of music. The authors reviewed 21 one-hour programs using an observation form.

The results of this study found that of the 759 program segments reviewed, 71% contained music and the majority of the music was instrumental. Music often served as a background and was used as a structural prompt for teaching academic and social skills. The authors also found that the programs primarily contained original music upbeat in tempo. The authors cited previous studies that determined that familiar melodies with upbeat tempos are more effective in teaching children new skills (Flowers, 1988; Gfeller, 1983; Wolfe & Hom, 1993).

This descriptive study recognizes the proliferation of music in at least one popular educational program. Music is used as a pleasurable stimulus for learning new skills. Additionally, music enhances communicative behaviors and may therefore serve to facilitate verbal learning.

Standley and Hughes (1996) evaluated the use of music therapy in early intervention programs. Specifically, the authors evaluated the developmental appropriateness of music therapy interventions by measuring group attentiveness and student success on specific tasks. A total of 33 children (all age 4 years) enrolled in early intervention classes in Florida public schools participated in this study. The subjects were divided into 2 classes. Class I consisted of 10 students who qualified under Early Intervention guidelines which will be discussed briefly, 4 students who qualified for Exceptional Student guidelines (2 visually impaired, 1 autistic, and 1 physically impaired), and 1 student who did not qualify for either category. The Florida Early Intervention Preschool Program guidelines state that 75% of the class must consist of students from economically disadvantaged backgrounds. The other 25% of the class must consist of students who have a disability, a history of abuse, a history of substance abuse exposure, live in foster care, or have been classified as "marginal" for exceptional child education. Class II consisted of 11 students who qualified for the Early Intervention program, 5 who qualified under Exceptional Student guidelines, and 2 children who did not qualify for either program. The classes were observed on 2 occasions by 14 trained

observers (inter-rater reliability $r = .85$) during their 30-minute music therapy sessions. On-task behavior was measured by the Student On-Task Observation Form (see Madsen & Madsen, 1983). Student success on specific tasks was measured by recording correct and incorrect responses. The curriculum of the program was assessed by reviewing criterion behaviors for developmental appropriateness. A content analysis was made by categorizing and quantifying criterion behaviors and concepts into the following categories: Communication/Language Skills, Social/Personal/Emotional Skills, Cognitive Concepts, and Motor Skills.

The results of this study showed that on-task behavior (97.5% of the time for Class I and 96.0% for Class II) and correct responses to specific tasks (94.5% of the time observed for Class I and 92.0% for Class II) were observed during the music therapy sessions. On-task behavior was observed the majority of the time, suggesting that music therapy interventions were developmentally appropriate to the criteria defined. Most importantly, this study suggests that music therapy interventions are within guidelines established for early childhood education (National Association for the Education of Young Children, 1986).

In summary, music therapy offers a collaborative addition to early childhood curriculum. However, there has been a trend to scale back music programs in elementary schools. Emphasizing the research in this area, there is at least one organization that has made a commitment to restoring music education

programs in public schools. The VH1 Save The Music Foundation™ has reportedly donated more than $10 million worth of music instruments and has used popular media to disseminate research on the benefits of music (Koransky, 1998). Private foundations along with scholarly contributors will likely continue research in this area and expand on these findings. The use of a control group in future studies will most likely strengthen these findings and provide direction for further research.

Music Therapy for the Gifted

Gifted children have special needs that are often overlooked by educators and researchers (Sieghart, 1978). Gifted children may become socially isolated and therefore lack adequate social skills and self-confidence (Betts, 1986). The need for affective education and preventive counseling for gifted children becomes apparent when working with this population (Delisle, 1980). Sisk (1987) stated that nurturing emotions is as important as nurturing the intellect, and he suggested that interventions might focus on expressing emotions, communicating with others, and increasing self-awareness. Guilford's studies on gifted children has also emphasized creativity, defined as fluency, flexibility, and readiness to change perception and thought, as an important predictor of a child's creative performance in everyday life (as cited in Kaufman, 1990).

Gregoire, Hughes, Robbins, and Burke Voorneveld (1989) investigated music therapy as an intervention to address the affective, social, and creative needs

of gifted children. The purpose of this study was to assess the effects of music therapy sessions on the self-concept of children in a gifted resource program. Eleven 4th grade students (five female and six male) attending a gifted resource program at a public elementary school participated in this study. The subjects attended 45-minute music therapy sessions twice weekly for a total of 8 sessions. Creativity was assessed through the Renzulli-Hartmann Creativity Checklist, and self-concept was assessed through the Piers-Harris Children's Self-Concept Scale. The subjects were given a therapist-designed questionnaire on their responses to the music therapy. The music therapy sessions included creative listening and imagery exercises as outlined in the Guided Imagery to Music Approach (GIM), a technique purported to facilitate relaxation, imagery, and creativity (Bonny & Savary, 1990). This intervention consisted of such varied techniques as listening to music, imitative singing, relaxation exercises, and drawing pictures of animals from imagery exercises.

The results of this study showed that, of the 11 subjects, 8 of them had increased scores at post-test on the Pier-Harris measure whereas 3 subjects had decreased scores. However, a t-test to compare the pre- and post-test means yielded a significant difference ($t = -2.577$, $df = 10$, $p = 0.26$). The range of Renzulli-Hartmann Checklist pre-test scores was from 15 to 27 out of a possible score of 35 with a mean of 22. The subjects' responses to the therapist-devised questionnaire was described to be very positive.

The author identified several limitations of this study. First, there was no control group. It is therefore difficult to generalize the findings to a specific factor. It is possible that the subjects were responding to the novel experience of having music therapy sessions in their resource class. Second, this study provided only one description of creativity; namely, that the subjects were working together while sharing feelings and ideas. Research in creativity in gifted children would require better operational definitions and multi-dimensional measures. Nevertheless, results of this study suggest that there may be improvements in self-esteem from music therapy interventions.

Psychiatric Music Therapy Programs

Cassity and Cassity (1994) evaluated psychiatric music therapy in clinical training facilities for adults, adolescents and children. The purpose of this study was to define and measure a common body of knowledge about psychiatric music therapy. As a structural starting point, the authors presented standards of practice as identified by the National Association for Music Therapy (NAMT; 1993) which emphasized assessment as the first task in developing a treatment plan. The authors indicated that it was unclear whether appropriate assessments are routinely made in psychiatric music therapy programs.

In their study, Cassity and Cassity (1994) sent out questionnaires to clinical training directors (CTD's) of facilities listed by NAMT as having music therapy programs. The clinical training directors were asked to indicate the types of

patients they preferred and the ages and genders of patients they were most qualified to assess. The questionnaire was constructed based on developmental checklists and a review of music activities that are commonly used in psychiatric music therapy. The authors looked at both music behavior (i.e., playing instruments) and non-music behaviors (i.e., aggressive behaviors). The resulting questionnaire contained 42 areas of assessment for adolescents and 20 areas for children. The CTD's were asked to indicate the five areas that they assessed most often by using a Likert scale ranging from "1" (most frequent) to "10" (least frequent). The quality of the questions was evaluated by five registered music therapists for content and clarity.

Of the clinicians who worked with the children in these facilities, 46% had master degrees; 53% of the clinicians working with adolescents had master degrees. For the most part, the clinicians employed music therapy as an activity therapy (62%) rather than an insight therapy with reconstructive goals (37%). Eighty-three percent reported that they assessed both music behavior and non-music behavior, and only 17% reported that they assessed non-music behavior alone. In terms of formal assessment, 94% of the clinicians reported that they do not use standardized tests. Seventy-two percent of the clinicians identified the need for standardized tests specific to music therapy, and 92% identified the need for treatment manuals for psychiatric music therapy.

The disorders treated most often in adolescents in rank order were conduct disorder, affective disorders, adjustment disorders, substance abuse, anxiety disorders and psychotic disorders. In children, the most common disorders were conduct disorder, adjustment disorder, anxiety disorders, affective disorders, psychotic disorders, and substance abuse. The Global Assessment of Functioning (GAF) scores for the adolescents ranged from 31 to 50 with a mean of 40.5. Children ranged from 33 and 50 with a mean of 45.76.

The authors of this study evaluated how the facilities assessed and treated non-music behavior. The non-music behavior areas identified included: interpersonal-socialization problems, cognitive problems, behavior problems, and physical problems.

Interpersonal-socialization skills. Within the interpersonal-socialization domain, withdrawn behavior was assessed and treated most frequently. The CTD's described the patients with withdrawn behavior as appearing seclusive, appearing uncomfortable in group settings, and not initiating conversation. More often, withdrawn behavior was treated with improvisation techniques and one-to-one instruction on a musical instrument. These interventions had the purpose of eliciting group interaction and establishing rapport and trust. The CTD's reported that the five most frequent interpersonal problems with adolescents were uncooperative behavior, lack of awareness of self/others, withdrawal, inappropriate use of leisure time, and failure to engage in leisure activities.

In children, the most frequent interpersonal problems were disruptive or socially inappropriate behavior, withdrawal, uncooperativeness, and not sharing. Most often, applied behavior analysis and the use of contingent music were used to treat interpersonal problems in children. Appropriate behavior was rewarded by allowing the children to engage in music therapy activities such as singing, listening to music, and playing instruments. Withdrawal in children was treated most often by using group instrumental activities to encourage interaction with peers.

Affective problems. The authors found that affective problems, specifically identified as the inability to express feelings and manifest anger or rage toward others, were the most frequently assessed problems with adolescents. CTD's responded that they often treat affective problems in order of frequency through music listening with discussion, improvisation, and music composition. For example, a common intervention in this area would be having the adolescent listen to popular song lyrics and asking them to identify the feelings that are being expressed. Adolescents with anger problems were often encouraged to improvise on musical instruments to express feelings nonverbally.

Cognitive problems. The authors found that cognitive problems were the third most frequently assessed type of problem for adolescents and the second most frequently assessed for children. The authors described cognitive problems as low self-esteem, lack of problem-solving skills, and paranoid behavior in

adolescents. Cognitive problems in children were described as difficulty following directions, lack of directionality and spatial concepts, and low self-esteem.

Behavior problems. Behavior problems were the second most frequently assessed problem for children, and the fifth for adolescents. Behavior problems were described as lack of assertiveness, attention deficits, not taking turns, hitting peers, and poor eye contact. It was found that most CTD's used both non-verbal (i.e., conducting an ensemble) and verbal techniques (i.e., asking the child to state his opinion about a piece of music).

Physical problems. Music was also used as an intervention for gross and fine motor deficits. For example, music movement activities such as skipping, jumping, or marching to music, were used to develop gross motor skills. CTD's used activities such as finger exercises on a keyboard for fine motor deficits. The authors noted that the music conditions served as intrinsic reinforcement for the children to continue developing both gross and fine motor skills.

This study provided a valuable glimpse of the practice of music therapy in psychiatric music therapy programs. Most importantly, specific areas of assessment and intervention were described that indicate the need for additional research. Psychiatric music therapy programs primarily employed music as a behavioral intervention. For example, music was often used as a reward for engaging in target behaviors. Music was also used for modeling social behaviors. In summary, the need for development of manuals and standardized protocols for

music therapy treatment of children and adolescents was identified by the participants and underscored in this study. With an increasing wealth of research in music therapy, manuals for practice may be on the near horizon.

Suggested Research

Research in music therapy has historically focused on adult populations and has centered on behavioral medicine applications. There is a clear need for more research on music therapy for children as a clinical treatment for psychiatric and developmental problems. From a developmental perspective, the possibility for research in music therapy with children is seemingly endless. Music has an inherent multi-modal quality that spans the developmental spectrum. Music therapy can be applied to many developmental tasks including the practice and mastery of age-appropriate skills, as has been shown in the studies covered in this paper. Playing musical instruments, for example, develops both gross and fine motor skills, as well as improving cognitive skills like language and mathematics.

Future research should also expand on the findings that music can increase social skills (Ulfarsdottir & Erwin, 1999) and enhance learning (Standley & Hughes, 1996). Future studies on the developmental benefits of music therapy should primarily consist of longitudinal comparison studies. A practical way of measuring developmental benefits of music might be accomplished by comparing

a classroom with a music enrichment program with another classroom without the program over time.

The literature suggested that there are neurophysiological changes that occur with music. For example, spatial task performance has been observed in subjects that were listening to music (Rauscher, Shaw, & Ky, 1993). However, the physiological pathways are still unclear, and more research is needed in this area to understand the mechanism that is responsible for these changes before these studies can be applied directly to clinical intervention. The hypothesis has been proposed that music masks extraneous stimuli, thus improving spatial task performance. To test this hypothesis, research in this area should begin with a well-controlled study establishing baseline measurements of the physiological and psychological effects of music. The study should include a large sample size of children divided into treatment and control groups. A clearly defined variable, such as spatial task performance, should be measured by validated and reliable instruments, some of which are in the early stages of development.

Research in cross-cultural applications of music therapy is needed. Music, like other art forms, is culturally loaded and reflects ideas, values, and traditions of a particular culture (Kamien, 1992). The non-verbal quality of music therapy is an advantage when language barriers are present. Standard music therapy interventions, such as GIM, use Western classical music (Bonny, 1978). However, cultural variables are likely impacting the outcome research in this area. Future

research should examine culturally familiar music in music therapy interventions. For example, a study that included Caucasian, African-American, Asian, Hispanic, and American Indian children exposed to the music of their culture and a control group of children exposed to Western (classical) music might establish whether there are indeed culturally relevant differences in music therapy interventions.

In summary, research in music therapy should generally be approached at both micro and macro levels of investigation. A micro level of research would examine basic and universal physiological and psychological effects of music. Following the lead of one study that identified three universal and culturally independent qualities of music (Skille & Wigram, 1995), research at a micro level should measure how tones and rhythms effect change. Well-controlled laboratory studies with large sample sizes would perhaps establish an understanding of how music affects emotions and behavior. At a macro level of investigation, future research should measure both laboratory and in vivo changes in behavior and affect with several age groups in various settings.

Existing models for psychiatric music therapy may be the best place to start. One of the most popular techniques is called the Bonny Method of Guided Imagery and Music (GIM). This music therapy method was developed in the early 70's and has enjoyed considerable success in its application to numerous problems and populations including substance abusers (Summer, 1985),terminally ill adults (Skaggs, 1997), forensic psychiatric patients (Nolan, 1983), physically disabled

elderly (Short, 1992), adults with PTSD (Blake & Bishop, 1994), and autistic patients (Edgerton, 1994). Additionally, GIM has been used to diagnose physical illness and trauma (Short, 1991). Based on psychodynamic principles, this method views music as a symbolic reflection that brings about experiences of the inner emotional life, a bridge between the internal and external (Clarkson & Geller, 1996; Goldberg, 1995). The affective component of music is seen as the primary component of this method.

GIM has a four-phase procedure: a) preliminary conversation (session bridging and behavioral observation; b) induction (relaxation and focusing techniques; c) music listening; and d) post-session integration (Goldberg, 1995). The structure of GIM facilitates good research design and provides the opportunity for step-wise assessment procedures with psychometrically validated instruments. Future research should build on this model and broaden the application of music therapy to children and their special developmental needs.

Conclusions

Based on this review of the recent literature, there is evidence that music therapy is an effective treatment for a variety of problems. Additionally, at least one study suggested that music therapy is an equally viable treatment to verbal therapy (Haines, 1989). Perhaps the qualitative features of music lend it to such diverse applications. Music has mood inductive and affective qualities that may

serve as a language of emotions (Giles et al., 1991; Wooten, 1992). Music also stimulates behavioral responses and provides a creative outlet for children (Edgerton, 1994; Giles et al., 1991; Haney & Durlak, 1998). The studies also provide support for developmental and physiological theories of music therapy (Aldridge et al., 1995; Rauscher et al., 1993; Skille & Wigram, 1995). Unfortunately, the current research in music therapy is fraught with methodological problems that weaken possible arguments for using this approach over other techniques. It is clear that additional research in music therapy is needed to confirm the limited data thus far. Nevertheless, the literature suggests that music therapy is effective in cognitive, affective, and behavioral domains.

In the cognitive sphere, the literature suggests that music therapy is effective in improving spatial task performance and enhancing learning (Gardiner et al., 1996; Rauscher et al., 1993). The authors of these studies have hypothesized that music masks extraneous background "noise," thus providing structure to focus on tasks. Additionally, it has been hypothesized that music provides a source of motivation and serves as reinforcement. However, these studies are limited by their design defects and only provide evidence of improved functioning in specific areas. It may be that music therapy interventions produced a novelty effect. The mechanism of how music therapy improves cognitive functioning remains unclear.

In terms of treatment of affective disorders, the literature suggests that music therapy improved self-confidence and self-esteem (Clendenon-Wallen,

1991). The literature suggests that music therapy is highly effective for inducing mood (Robazza, Macaluso, & D'Urso, 1994), improving self-esteem (Haines, 1989), and providing identification of affect (Bonny & Savary, 1990). Subjectively, it seems that music therapy fosters a therapeutic environment and provides safe communication of affect through musical behavior (Goodman, 1989). However, these studies are primarily single subject designs with methodological problems. Nevertheless, music therapy seems to be an appropriate intervention for the younger child who does not have the cognitive and language skills to express affect. For the older child and adolescent, music often provides a bonding experience as well as a label for experience (Wooten, 1992). These studies on music therapy provide further evidence of the affective quality of music.

Finally, the literature suggests that music therapy is effective for improving motor skills and reinforcing on-task behavior (Burleson et al., 1989; Standley & Hughes, 1996). Music increased spontaneous behaviors and was used in one study as reinforcement for target behaviors (Montello & Coons, 1998). The literature also suggests that music facilitates communication responsiveness in both language disordered and autistic children (Braithwaite & Sigafoos, 1998; Cassidy, 1992; Edgerton, 1994). Studies have shown that music therapy improves spontaneous speech and improves both non-verbal and verbal communication.

In summary, there is sufficient current evidence to justify using music therapy in the treatment of children in the following ways: a) To improve on-task behavior in young children with attention problems; b) To provide a creative outlet and establish rapport in therapy; c) To improve spatial task performance; d) As an adjunctive therapy for improving self-esteem; and e) To facilitate communication in children with developmental or expressive language disorders.

The research and practice of music therapy is in many ways at the crossroads of a new frontier that converges art and science into empirically based applications. The literature suggests that there are many advantages to using music therapy with children. However, further research is needed before music therapy applications can be validated as a primary treatment. Like other disciplines before, music therapy must forge ahead into scientific inquiry without sacrificing artistic roots. Surely, the advancement of this treatment approach will be an exciting opportunity for the musicians and scientists in all of us.

REFERENCES

Aldridge, D. (1993). Music therapy research: II. Research methods suitable for music therapy. The Arts in Psychotherapy, 20 (2), 117-131.

Aldridge, D, Gustorff, D., & Neugebauer, L. (1995). A preliminary study of creative music therapy in the treatment of children with developmental delay. The Arts in Psychotherapy, 22 (3), 189-205.

Altschuler, I. M., & Shebesta, B. H. (1941). Music as an aid in the management of the psychotic patient. Journal of Nervous and Mental Disorders, 94, 179-183.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

Asarnow, J. R. (1994). Annotation: Childhood-onset schizophrenia. Journal of Child Psychology and Psychiatry, 35, 1345-1371.

Asarnow, J. R., & Asarnow, R. F. (1996). Childhood-onset schizophrenia. In E. J. Mash & R. A. Barkley (Eds.), Child psychopathology (pp. 340-361). New York, NY: The Guilford Press.

Austin, D. S. (1996). The role of improvised music in psychodynamic music therapy with adults. Music Therapy, 14 (1), 29-43.

Bagley, C., & McGeein, V. (1989). The taxonomy and course of childhood autism. Perceptual and Motor Skills, 69 (3, Pt. 2), 1264-1266.

Betts, G. T. (1986). Development of the emotional and social needs of gifted individuals. Journal of Counseling and Development, 64, 587-589.

Blake, R. L. & Bishop, S. R. (1994) The Bonny Method of Guided Imagery and Music (GIM) in the treatment of post-traumatic stress disorder (PTSD) with adults in the psychiatric setting. Music Therapy Perspectives, 12(2), 125-129.

Blitstein, S., & Michel, J. (1979). Use of videotape feedback with several disturbed adolescents. Child Welfare, 58(4), 245-252.

Bonny, H. (1978). The role of taped music programs in the GIM process. Salina, KS: Bonny Foundation.

Bonny, H., & Savary, L. (1990). Music and your mind: Listening with a new consciousness. Barrytown, NY: Station Hill Press.

Braithwaite, M., & Sigafoos, J. (1998). Effects of social versus musical antecedents on communication responsiveness in five children with developmental disabilities. Journal of Music Therapy, 35 (2), 88-104.

Bunt, L., & Hoskyns, S. (1987). A perspective on music therapy research in Great Britain. British Journal of Music Therapy, 1, 3-6.

Burleson, S. J., Center, D. B., & Reeves, H. (1989). The effect of background music on task performance in psychotic children. Journal of Music Therapy, 26 (4), 198-205.

Camilleri, L. (1992). On music perception and cognition: Modularity, structure, and processing. Minds & Machines, 2(4), 365-377.

Case, R. (1993). Theories of learning and theories of development. Educational Psychologist, 28(3), 219-233.

Cassidy, J. W. (1992). Communication disorders: Effect on children's ability to label music characteristics. Journal of Music Therapy, 29(2), 113-124.

Cassity, M. D., & Cassity, J. E. (1994). Psychiatric music therapy assessment and treatment in clinical training facilities with adults, adolescents, and children. Journal of Music Therapy, 31(1), 2-30.

Clarkson, G., & Geller, J. D. (1996). The Bonny method from a psychoanalytic perspective: Insights from working with a psychoanalytic psychotherapist in a guided imagery and music series. The Arts in Psychotherapy, 23(4), 311-319.

Clendenon-Wallen, J. (1991). The use of music therapy to influence the self-confidence and self-esteem of adolescents who are sexually abused. Music Therapy Perspectives, 9, 73-81.

Cohn, J. F., & Tronick, E. Z. (1988). Mother-infant face-to-face interaction: Influence is bi-directional and unrelated to periodic cycles in either partner's behavior. Developmental Psychology, 24, 396-397.

Cornman, B. J. (1997). Female adolescent response to childhood sexual abuse. Journal of Child and Adolescent Psychiatric Nursing, 10 (2), 17-25.

Courtois, C., & Sprei, J. (1988). Retrospective incest therapy for women. In L. Walker & E. A. Leonore (Eds.), Handbook on sexual abuse of children (pp. 270-308). New York: Springer Publishing Company.

Dainow, E. (1977). Physical effects and motor responses to music. Research in Music Education, 25, 211-221.

Delisle, J. (1980). Preventative counseling for the gifted adolescent: From words to action. Roeper Review, 3 (2), 21-25.

Demorest, S. M. (1992). Information integration theory: An approach to the study of cognitive development in music. Journal of Research in Music Education, 40 (2), 126-138.

Dolgin, K., & Adelson, E. H. (1990). Age changes in the ability to interpret affect in sung and instrumentally-presented melodies. Psychology of Music, 18, 87-98.

Edgerton, C. L. (1990). Creative group songwriting. Music Therapy Perspectives, 8, 15-19.

Edgerton, C. L. (1994). The effect of improvisational music therapy on the communicative behaviors of autistic children. Journal of Music Therapy, 31, 31-62.

Egloff, B. (1998). The independence of positive and negative affect depends on the affect measure. Personality & Individual Differences, 25(6), 1101-1109.

Erikson, E. H. (1963). Childhood and society. New York: W. W. Norton.

Erikson, E. H. (1968). Identity: Youth and crisis. New York: W. W. Norton.

Flowers, P. J. (1988). The effects of teaching and learning experiences, tempo, and mode on undergraduates' and children's symphonic music preferences. Journal of Research in Music Education, 36, 19-34.

Galimany, N. N. G. (1993). Musical pleasure. International Journal of Psychoanalysis, 74, 383-391.

Gardiner, M. F., Fox, A., Knowles, F., & Jeffrey, D. (1996, May 23). Learning improved by arts training. Nature, 381, 284.

Garralda, M. E. (1984). Hallucinations in children with conduct and emotional disorders: I. The clinical phenomena. Psychological Medicine, 14, 589-596.

Gfeller, K. E. (1983). Musical mnemonics as an aid to retention with normal and learning disabled students. Journal of Music Therapy, 20, 179-189.

Gfeller, K. E. (1987). Music therapy theory and practice as reflected in research literature. Journal of Music Therapy, 24 (4), 178-194.

Giles, M. M., Cogan, D., & Cox, C. (1991). A music and art program to promote emotional health in elementary school children. Journal of Music Therapy, 28 (3), 135-148.

Gillberg, C., & Steffenburg, S. (1987). Outcome and prognostic factors in infantile autism and similar conditions: A population-based study of 46 cases followed through puberty. Journal of Austism and Developmental Disorders, 17 (2), 273-287.

Goldberg, F. S. (1995). The Bonny Method of Guided Imagery and Music. In T. Wigram, B. Saperston, & R. West. (Eds.), The art & science of music therapy: A handbook (pp. 112-128). The Netherlands: Harwood.

Goodman, K. D. (1989). Music therapy assessment of emotionally disturbed children. The Arts in Psychotherapy, 16, 179-192.

Graham, R. M. (1978). Music therapy. Art Psychotherapy, 5 (1), 5-6.

Gregoire, M. A., Hughes, J. E., Robbins, B. J., & Burke Voorneveld, R. (1989). Music therapy with the gifted? A trial program. Music Therapy Perspectives, 7, 23-27.

Haines, J. H. (1989). The effects of music therapy on the self-esteem of emotionally-disturbed adolescents. Music Therapy, 8(1), 78-91.

Hairston, M. J. P. (1990). Analyses of responses of mentally retarded autistic and mentally retarded nonautistic children to art therapy and music therapy. Journal of Music Therapy, 27, 137-150.

Haney, P., & Durlak, J. A. (1998). Changing self-esteem in children and adolescents: A meta-analytic review. Journal of Clinical Child Psychology, 27 (4), 423-433.

Harding, C., & Ballard, K. D. (1982). The effectiveness of music as a stimulus and as a contingent reward in promoting the spontaneous speech of three physically handicapped preschoolers. Journal of Music Therapy, 19(2), 86-101.

Henderson, S. M. (1983). Effects of a music therapy program upon awareness of mood in music, group cohesion, and self-esteem among hospitalized adolescent patients. Journal of Music Therapy, 20(1), 14-20.

Hoskins, C. (1988). Use of music to increase verbal response and improve expressive language abilities of preschool language delayed children. Journal of Music Therapy, 25(2), 73-84.

Hughes, M. H. (1995). A comparison of mother-infant interactions and the client-therapist relationship in music therapy sessions. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook (pp. 296-306). The Netherlands: Harwood.

Humpal, M. (1991). The effects of an integrated early childhood music program on social interaction among children with handicaps and their typical peers. Journal of Music Therapy, 28(3), 161-177.

Isenberg-Grzeda, C. (1988). Music therapy assessment: A reflection of professional identity. Journal of Music Therapy, 25 (3), 156-169.

John, D. (1995). The therapeutic relationship in music therapy as a tool in the treatment of psychosis. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook (pp. 157-166). The Netherlands: Harwood.

Johnson, R. E. (1981). E. Thayer Gaston: Leader in scientific thought on music therapy and education. Journal of Research in Music Education, 29(4), 279-286.

Kamien, R. (1992).Music: An appreciation (5th ed.). New York: McGraw-Hill, Inc.

Kaufman, A. S. (1990). Assessing adolescent and adult intelligence. Boston: Allyn and Bacon, Inc.

Kenealy, P. (1988). Validation of a music mood induction procedure: Some preliminary findings. Cognition & Emotion, 2, 41-48.

Kivland, M. J. (1986). The use of music to increase self-esteem in a conduct disordered adolescent. Journal of Music Therapy, 23(1), 25-29.

Koegel, R. L., & Frea, W. D. (1993). Treatment of social behavior in autism through the modification of pivotal social skills. Journal of Applied Behavior Analysis, 26 (3), 369-377.

Koransky, J. (1998). VH1 program fights to save public music education. Down Beat, 65(10), 14-15.

Lewis, J. M. (1993). Childhood play in normality, pathology, and therapy. American Journal of Orthopsychiatry, 63(1), 6-15.

Lindberg, K. A. (1995). Songs of healing: Songwriting with an abused adolescent. Music Therapy, 13(1), 93-108.

Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. Developmental Psychology, 28, 1006-1018.

Madsen, C. K., & Madsen, C. H., Jr. (1983). Teaching/discipline: Behavioral principles toward a positive approach (3rd ed.). Raleigh, NC: Contemporary Publishing, Inc.

Mash, E. J., & Dozois, D. J. A. (1996). Child psychopathology: A developmental-systems perspective. In E. J. Mash & R. A. Barkley (Eds.), Child psychopathology (pp. 3-60). New York, NY: The Guilford Press.

Michel, D. E., & Martin, D. (1970). Music and self-esteem research with disadvantaged, problem boys in an elementary school. Journal of Music Therapy, 7(4), 124-127.

Montello, L. M., (1999). A psychoanalytic music therapy approach to treating adults traumatized as children. Music Therapy Perspectives, 17(2), 74-81.

Montello, L. M. & Coons, E. E. (1998). Effects of active versus passive group music therapy on preadolescents with emotional, learning, and behavioral disorders. Journal of Music Therapy, 35 (1), 49-67.

Moreno, J. J. (1980). Musical psychodrama: A new direction in music therapy. Journal of Music Therapy, 17, 34-42.

National Association for the Education of Young Children. (1986). Position statement on developmentally appropriate practice in early childhood programs serving children from birth through age 8. Washington, DC: NAEYC.

Nolan, P. (1983). Insight therapy: Guided imagery and music in a forensic setting. Music Therapy, The Journal of the American Association for Music Therapy, 3, 43-51.

Nordoff, P., & Robbins, C. (1977). Creative music therapy. New York: John Day.

Odell-Miller, H. (1995). Approaches to music therapy in psychiatry with specific emphasis upon a research project with the elderly mentally ill. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook (pp. 83-111). The Netherlands: Harwood Academic Publishers.

Oldfield, A. (1995). Communicating through music: The balance between following and initiating. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook (pp. 226-237). The Netherlands: Harwood Academic Publishers.

Parente, J. A., & O'Malley, J. J. (1975). Training in musical rhythm and field dependence of children. Perceptual and Motor Skills, 40, 392-394.

Peach, S. (1984). Some implications for the clinical use of music facilitates imagery. Music Therapy, 21, 27-34.

Pignatiello, M. F., Camp, C. J., & Rasar, L. A. (1986). Musical mood induction: An alternative to the Velten technique. Journal of Abnormal Psychology, 95, 295-297.

Pignatiello, M. F., Camp, C. J., Elder, S. T., & Rasar, L. A. (1989). A psychophysiological comparison of the Velten and musical mood induction techniques. Journal of Music Therapy, 26 (3), 140-154.

Priestley, M. (1995). Linking sound and symbol. In T. Wigram, B. Saperston, & R. West. (Eds.), The art & science of music therapy: A handbook (pp. 129-138). The Netherlands: Harwood.

Rauscher, F. H., Shaw, G. L., & Ky, K. N. (1993, October 14). Music and spatial task performance. Nature, 365, 611.

Rider, M. S., Floyd, J. W., & Kirkpatrick, J. (1985). The effect of music, imagery, and relaxation on adrenal corticosteroids and the re-entrainment of circadian rhythms. Journal of Music Therapy, 22, 46-58.

Robazza, C., Macaluso, C., & D'Urso, V. (1994). Emotional reactions to music by gender, age, and expertise. Perceptual and Motor Skills, 79, 939-944.

Ross, D. M., Ross, S. A., & Kuchenbecker, A. (1973). Rhythm training for educable mentally retarded children. Mental Retardation, 11(6), 20-23.

Russell, A. T. (1994). The clinical presentation of childhood-onset schizophrenia. Schizophrenia Bulletin, 20, 631-646.

Sandrock, D., & James, M. R. (1989). Assessment instruments for music-assisted relaxation training. Music Therapy Perspectives, 7, 44-50.

Saperston, B. M. (1989). Music-based individualized relaxation training (MBIRT): Sequential stress reduction techniques for the behaviorally disturbed mentally retarded. Music Therapy Perspectives, 6, 26-33.

Saroyan, J. S. (1990). The use of music therapy on an adolescent psychiatric unit. Journal of Group Psychotherapy, Psychodrama & Sociometry. Special Issue: Psychodrama and Group Work with Adolescents, 43(3), 139-141.

Sattler, J. M. (1992). Assessment of children (Rev. 3rd ed.). San Diego: Jerome M. Sattler.

Seybold, D. D. (1971). The value and use of music activities in the treatment of speech delayed children. Journal of Music Therapy, 8,102-110.

Shatin, L. (1970). Alterations of mood via music: A study of the vectoring effect. The Journal of Psychology, 75, 81-85.

Short, A. E. (1991). The role of guided imagery and music in diagnosing physical illness or trauma. Music Therapy, 10(1), 22-45.

Short, A. E. (1992). Music and imagery with physically disabled elderly residents: A GIM adaptation. Music Therapy, 11(1), 65-98.

Sieghart, F. (1978). Profile: The National Association for Gifted Children. Child Care Health Development, 4(4), 273-277.

Sigafoos, J., & Pennell, D. (1995). Parent and teacher assessment of receptive and expressive language in preschool children with developmental disabilities. Education and Training in Mental Retardation and Developmental Disabilities, 30, 329-335.

Sisk, D. (1987). Creative teaching of the gifted. New York: McGraw-Hill.

Skaggs, R. (1997). The Bonny Method of Guided Imagery and Music in the treatment of terminal illness: A private practice setting. Music Therapy, 15(1), 39-44.

Skille, O. (1989). Vibro acoustic therapy, Music Therapy, 8, 61-77.

Skille, O., & Wigram, T. (1995). The effects of music, vocalisation and vibration on brain and muscle tissue: Studies in vibroacoustic therapy. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook (pp. 23-57). The Netherlands: Harwood Academic Publishers.

Smeijsters, H. (1995). The functions of music in music therapy. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook (pp. 385-394). The Netherlands: Harwood Academic Publishers.

Spivack, G., & Shure, M.B. (1974). Social adjustment of young children: A cognitive approach to real-life problems. San Francisco: Jossey-Bass.

Standley, J. M. (1992). Meta-analysis of research in music and medical treatment: Effect size as a basis for comparison across multiple dependent and independent variables. In R. Spintge & R. Droh (Eds.), Musical medicine (pp. 364-378). St. Louis, MO: Magnum Music Baton, Inc.

Standley, J. M., & Hughes, J. E. (1996). Documenting developmentally appropriate objectives and benefits of a music therapy program for early intervention: A behavioral analysis. Music Therapy Perspectives, 14, 87-94.

Stevens, C., & Latimer, C. (1997). Music recognition: an illustrative application of a connectionist model. Psychology of Music, 25 (2), 161-185.

Summer, L. (1985). Imagery and music. Journal of Mental Imagery, 9, 83-90.

Sutton, K. (1984). The development and implementation of a music therapy physiological measures test. Journal of Music Therapy, 21 (4), 160-169.

Ulfarsdottir, L.O., & Erwin, P.G. (1999). The influence of music on social cognitive skills. The Arts in Psychotherapy, 26(2), 81-84.

Wigram, T. (1995). The psychological and physiological effects of low frequency sound and music. Music Therapy Perspectives, 13 (1), 16-23.

Wigram, T., Saperston, B., & West, R. (1995). Preface. In T. Wigram, B. Saperston, & R. West (Eds.), The art & science of music therapy: A handbook, The Netherlands: Harwood Academic Publishers.

Wolfe, D. E., & Hom, C. (1993). Use of melodies as structural prompts for learning and retention of sequential verbal information by preschool students. Journal of Music Therapy, 30,100-118.

Wolfe, D. E., & Stambaugh, S. (1993). Musical analysis of Sesame Street: Implications for music therapy practice and research. Journal of Music Therapy, 30 (4), 224-235.

Wooten, M. A. (1992). The effects of heavy metal music on affects shifts of adolescents in an inpatient psychiatric setting. Music Therapy Perspectives, 10, 93-98.

Zatorre, R. J. (1999). Brain imaging studies of musical perception and musical imagery. Journal of New Music Research, 28 (3), 229-236.

Zigler, E. F., & Finn Stevenson, M. F. (1993). Children in a changing world: Development and social issues, (2d ed.). Pacific Grove, CA: Brooks/Cole Publishers.

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